The Honolulu Advertiser

MONDAY MAY 17, 1999

Barking Sands site of U.S. climate research

By Jan TenBruggencate
ADVERTISER SCIENCE WRITER

BARKING SANDS, Kauai — A high-flying pilotless plane and twin-engine conventional aircraft are flying together off Kauai to learn the secrets of how clouds block solar radiation.

Scientists hope the information they gather will help weather experts create better climate models to analyze global warming.

The work, part of the U.S. Department of Energy's atmospheric radiation measurement program, uses a unique unmanned aircraft called Altus.

The Pacific Missile Range Facility on Kauai was selected for some of the research because of its comparative lack of air traffic and abundance of tropical cirrus clouds. Flights off Kauai were scheduled from late April to late May.

Cirrus clouds are high clouds made of ice crystals that can block incoming solar radiation and act as a blanket to prevent the loss of heat from the Earth's surface. Scientists understand the theory, but not the details.

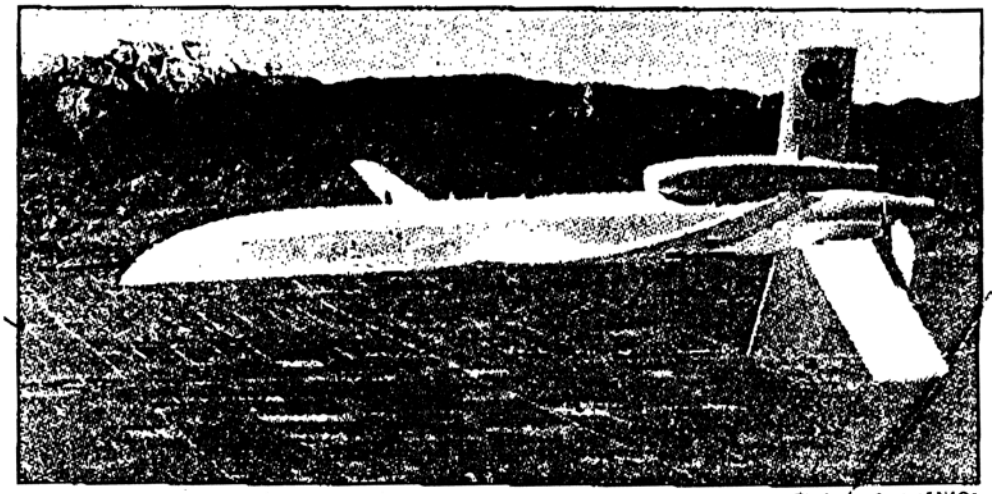

Photo courtesy of NASA

The Altus is a high-altitude, rear-engine pilotless aircraft, a civilian version of a surveillance plane called the Predator. It can fly as high as 65,000 feet, NASA reports.

"The tropics are where most of the energy is put into the atmosphere. We want to know where it is deposited and moved," said Bob Ellingson, a University of Maryland meteorology professor and mission scientist for the Kauai flights.

The program is conducting its research by sending out two planes — one to fly above the clouds using instruments looking down, and one to fly below them using instruments to look up. The planes use satellite navigation to ensure the high and low planes are directly above and below each other, looking at the same parts of the clouds at the same time.

The lower plane is a conventional twin-engine craft with human pilots. The high-altitude plane is a remote-controlled version of a military surveillance plane called the Predator. The civilian version, the Altus, is supercharged, and can fly as high as 65,000 feet.

See CLOUDS, B2

Clouds: Pilotless plane scans skies above Kauai

FROM PAGE B1

The Altus is built by General Atomics Aeronautical Systems, whose staff operate it from an instrument van supplied with what look like twin flight-simulator seats complete with extensive instrument readouts and video views of what's ahead of the plane.

The Department of Energy and NASA, working with the manufacturer and the Pacific Missile Range Facility, are collecting the data, which eventually will be plugged into computer models that seek to predict global climate behavior.

"We need to reduce the complexity of these models, and the largest single source of uncertainty of climate circulation models is how they treat clouds," said Will Bolton, an aerospace engineer at Sandia National Laboratory in Albuquerque, N.M., and deputy technical director of the cloud study program.

He said previous studies have been done with lower-level clouds over Oklahoma. Once the Kauai studies are complete, the program will return to the Mainland with its aircraft, but will look for a site even closer to the equator. Several Pacific islands are under consideration, he said.

The Altus is the second pilotless experimental plane used in high-altitude experiments at the Pacific Missile Range Facility. Earlier, a huge solar-powered flying wing, the Pathfinder, flew to 80,000 feet over Kauai, establishing a record for solar-powered aircraft.

Both Altus and Pathfinder are experimental planes that are part of NASA's Environmental Research Aircraft and Sensor Technology program.